

ABSTRACT OF THE INVENTION

As disclosed herein, the present invention is directed to a novel system for monitoring cell movement in response to chemotactic and chemokinetic factors. In this system, cells migrate in an under-agarose environment and their position is monitored using a system capable of measuring changes in impedance and other electrical parameters of the system at a target electrode lithographed onto a substrate as the cells arrive at the target. With the disclosed system, the time of arrival of cells at the target electrode is proportional to the dose of the chemoattractant species used to stimulate the cells and can be assessed by changes in resistance at the electrode. The system is readily able to distinguish between wild-type cells and mutants that are deficient in their chemotactic response. In addition, agents that interfere with chemotactic motility can be shown to lead to delayed arrival of cells at the target electrode. The multi-well configuration of the disclosed assay system allows for simultaneous automated screening of many samples for chemotactic or anti-chemotactic activity.